aorta itself; and the products under the microscope were precisely similar to those presented by the clots in the heart. All the arteries which were given off from the aorta, between the superior mesenteric and profunda femoris, were blocked up for a short distance. Each of the femoral veins at the groin contained a short recent clot. The anterior crural nerves in both thighs ran close to the femoral artery, and were implicated in surrounding (inflammatory?) changes and thickening. There was a good deal of infiltration of the cellular tissue with fluid. In the right kidney there was considerable yellowish fibrinous deposit; the capsule being removed left a rough granular surface. In the left kidney was an apparent abscess in the cortical structure; the contents however, were not pus, though very like it in appearance. Under the microscope, characters were presented precisely similar to those which have been described as seen in the heart, with this addition, that there were numerous crystals of triple phosphate of ammonia and magnesia. The distinction between the cortical and medullary structure was more than usually evident from the yellowish deposit being most abundant in the former. All the other organs were healthy. Brain not examined, nor the arteries of the upper extremities.

The primary cause of the arterial obstruction in this case is not very clear, except that from the early history, as well as from the condition of the heart, as ascertained after death, it is evident that the central circulatory power was seriously impaired. The debility, dyspnoea and oedema of the lower extremities, with palpitation of the heart prior to delivery, indicate an enfeebled state of the circulation, with probably a distended state of the heart. The exact condition of the patient in the interval between her delivery, and ten days before her entrance into the hospital, could not be satisfactorily ascertained. At the latter period, however, we have evidence again of the same state of circulation, in syncope, congested lungs, and probably, temporary obstruction of the circulation in the left arm. The ascertained condition of the heart justifies the conclusion that its contractile power was much impaired. Neither the condition of the valves of the heart, nor the character of the clot, nor the mode of accession of the symptoms of obstruction appear to me to justify the supposition that there had been any detachment of organised clots from the valves of the heart. But it does not appear to me at all improbable that there may have been, on more than one occasion, coagula formed in the cavities of the heart, and sent along the circulatory current. There is not, I think, sufficient evidence to lead to the conclusion that the case was one of arteritis; at all events, not what is ordinarily understood as arteritis. The circulation of morbid matters in the blood, or any special diseased state of such fluid, is not proved, and can only be matter of speculation. The structural changes in the heart and kidney show, however, a morbid state of nutrition. The connexion of the arterial obstruction with the puerperal state in this, as in other cases, it is difficult to explain. If, however, a permanently weakened heart, with degeneration of its muscular tissue, be sufficient to account for polypous formations in its cavities, especially as in this case where an incipient aneurismal dilatation existed, it is easy to understand how the debilitating circumstances attendant on parturition should still further favour such formations. The languid circulation through the main arteries would favour the arrest of coagula, which from time to time might be propelled from the heart, and lead to further coagulation. I have met with another case of spontaneous gangrene occurring in a male, about forty years of age, in whom there was reason to think that the arterial obstruction was dependent on cardiac disease characterised by dilatation and enfeebled power of the heart, and associated with paroxysmal attacks of an asthmatic nature. This man recovered, after losing the great toe and a portion of the next and a considerable part of the integuments of the dorsum of the foot. He had not had any rheumatic disease, and the obstruction occurred suddenly, and was attended by great pain in the foot with evidence of obliteration of the main artery as high up as

the popliteal space, irregularity and feebleness of heart's action and of the general circulation. His recovery was marked by a steady and striking improvement in his nutrition, and in the general vigour of his circulation, though he continued to have occasional asthmatic paroxysms which were relieved by ordinary means and terminated in the usual way by free expectoration.

15, Finsbury Square, Feb. 1854.

COMPOUND FRACTURES OF THE CRANIUM WITH DEPRESSION.

By ELLIS JONES, Esq., Surgeon to the Liverpool Northern Hospital.

CASE I. A young married woman, aged about 20, was admitted into the Liverpool Northern Hospital on Feb. 26th, 1853, with compound fracture of the right parietal bone, with depression of the upper portion, which was firmly fixed beneath the lower portion, but not comminuted. The external wound of the coverings of the skull was about two inches in length; and the depressed part could be very easily seen, and felt by the finger. The injury was caused by a large slate, on a windy day, falling upon her head from a roof of a house whilst she was passing underneath. She was insensible for some time after she came to the hospital; but she gradually recovered from the state of unconsciousness; and when I first saw her, two hours after the receipt of the injury, she was then sensible, but said that things in the room appeared to turn round, and that she felt giddy, with slight confusion of ideas. I had seen similar cases in the course of four or five weeks terminating most unfavourably by the non-interfering plan, that is, permitting the depressed portion to remain, and thus causing irritation and ultimately terminating in suppuration, at which time, perhaps, the trephine would be applied, but in general at too late a period to be of any service. Although in this case there was not a complete state of insensibility, yet, from the unfavourable result of other cases which had been left without elevating the depressed portion of bone, it was deemed here advisable to do so. The trephine was applied; and several detached portions were removed. Immediately afterwards, the giddiness and other signs of confusion left her; and her recovery was complete in about two months. She has continued in a good state of health ever since.

CASE II. A woman, aged 55, was admitted into the hospital on January 2nd, 1854. She was engaged in assisting to carry a load of coal into a house, when a horse knocked her down, and afterwards kicked her over the frontal bone, producing a fracture with central depression just over the external angle of the orbit, on the right side, with a lacerated wound of the integuments over the seat of the fracture. There was a state of stupor immediately after the accident. On her arrival at the hospital, however, she was conscious, but in a state of collapse, from which she soon recovered. She had lost some blood from a branch of the temporal artery which had been divided. The wound was irregular, about two inches in extent, and on introducing the finger, the os frontis was found fractured, and a considerable portion of it comminuted, depressed, and wedged firmly under the upper portion of bone. The trephine was applied, and three detached portions were removed. The dura mater was slightly punctured by a spiculum of bone. The fracture extended, to all appearance, in the direction of the right orbit. This case, like the other, has daily progressed favourably since the operation; and she is now able to walk about the ward, not suffering from a single unfavourable symptom.

I wish to relate the following case out of many other similar cases which have fallen under my observation, in which the non-interfering plan was adopted.

CASE. COMPRESSION OF THE BRAIN FROM COMPOUND FRACTURE OF THE OS FRONTIS; SYMPTOMS OF COMPRESSION COMING ON FOUR WEEKS AFTER THE ACCIDENT. An Italian sailor, aged 30, was admitted into the Northern Hospital on

the 2nd of September, 1852, with compound fracture of the os frontis, caused by a blow from a handle of a winch in violent motion on board of a vessel in one of the docks. The external wound was about two inches in length over the right eye-brow. The bone was fractured across; the upper portion was depressed, and the lower, as it were, lapping over it. When the man came in he was perfectly sensible, and there were no symptoms of compression. It was considered, under these circumstances, that the best plan would be not to interfere by an operation, but to leave the case alone, and only to treat symptoms as they occurred. He went on to all appearances favourably for four weeks, when he became low and dejected; previously he had felt cold, and had a rigor.

It was supposed at the time that he had got low spirited in consequence of his friends, who were in the habit of coming to the hospital to see him, being obliged to leave with the vessel. On the 2nd of October, he was dejected and would hardly speak; but on the following morning he became insensible, and was labouring under symptoms of compression. A consultation was called, and it was agreed that the depressed portion of bone should be elevated. Hey's saw was used; and the other part was elevated, still after this there was no evident good result; but on feeling the dura mater, fluctuation was felt under the finger; an opening was made into it, when a quantity of pus came out. The breathing became somewhat better, and the pulse quicker, but no sign of returning consciousness appeared. The patient died that night.

On examination of the body, on October 5th, an abscess of about the size of a pigeon's egg was found in the anterior lobe of the cerebrum, exactly under the seat of the fracture, containing a quantity of pus.

REMARKS. In all the foregoing cases of compound fracture of the skull with depression, a portion of bone was wedged firmly under another portion, and driven in the depth of the elevated part of the fracture; and all of them were accompanied with laceration of the integuments over the seat of the injury. In none of the cases were there complete symptoms of compression; still it was deemed advisable to perform the operation of trephining, and that with the most happy result. It has been recommended for many years past, by authors of considerable eminence, never to interfere by an operation when the depression of bone is unaccompanied with symptoms of compression. However, I have seen this plan adopted on several previous occasions with very unfavourable results, when to all appearance, for three weeks or a month, the cases were progressing satisfactorily; symptoms of compression would then manifest themselves, and perhaps at this time the trephine would most likely be applied; in my opinion, at too late a period to be attended with any advantage, the long continued pressure causing irritation and slow inflammation of the parts underneath, terminating in suppuration and death. Mr. Pott gives the reasons why, in his opinion, the practice of trepanning should be adopted in fractures of the skull. He says: "It is true, in many cases, that fractures of the skull are not attended with any symptoms that actually require this operation at the moment; but, although there may be no symptoms denoting affection of the membranes or of the brain, that inflammation of those parts will come on at a more or less remote period of time, and therefore the operation should be had recourse to, in order to prevent the occurrence of such inflammation."

An eminent living surgeon, in one of his lectures on fractures of the skull, speaks in the following manner as to the line of practice to be pursued in such cases, and which has been generally practised for the last thirty years:—

"In the present day, we have entirely discarded the doctrine of employing the trephine, or instruments of any sort, in all kinds of fractures of the skull, and consider it as a measure that we are not to have recourse to, except where there is depression of the bone, and that depression of the bone accompanied with symptoms of pressure of the brain."

In fracture of the skull without depression of the bone, no one would think of applying the trephine; but when

there is the depression such as that I have attempted to describe, although there may not be any symptoms of compression, in my opinion it is the safest practice to elevate the depressed portion of bone as early as possible after the accident, and especially if the fracture is exposed. If it be allowed to remain, it is only a source of irritation in a great many instances, producing inflammation of the dura mater and the brain, ending in suppuration; and if the trephine is applied at this period, it is seldom attended with success. This is the result of my experience in cases of this description.

Liverpool, February 4, 1854.

THE CONDITION OF THE RESPIRATION IN DISEASE.

By SAMUEL WILKS, M.D.Lond., Physician to the Surrey Dispensary.

HAVING for many years been in the habit of noting the number of respirations in cases of disease, I intend, in the present communication, to show the marked increase it undergoes in all febrile affections—a fact not mentioned in many treatises among the category of symptoms which accompany these conditions. I was first led particularly to mark the state of breathing upon reading, in Carpenter's *Physiology*, that sometimes in typhus the number of respirations is depressed from the influence of the morbid poison on the nervous system. Feeling that all my observations had never led me to such a conclusion, I carefully took notes of a large number of cases of fever, and found that my former experience was invariably verified.

It requires a little consideration to see clearly on what the number of respirations, either in health or disease, depends. The amount of the respiratory process might, I think, be correctly stated to be dependent upon the amount of blood to be aerated, or, in more precise terms, the degree of the respiratory process would be a measure of the amount of effete matter in the blood, or that part of it which is brought to the lungs. The impurity of the blood, and consequent increased work of the lungs, would depend upon many causes, the wear and tear of the body, various morbid conditions, the derangement of other organs, etc. The only means for measuring accurately the amount of work done, would be by the spirometer, which should calculate the quantity of carbonic acid and vapour given off by the lungs. I am not aware that of late any very lengthened or systematic observations have been made on this subject, and those formerly published by various experimenters were scanty, and to some extent contradictory; but that the function of respiration varies in different diseases, there cannot be a doubt. From all analogy, from the condition of other organs in disease, as the kidney and urine in febrile affections, it is just to suppose that the excrementitious matter in the blood is at one time more in quantity than at another, and consequently the lungs would have to take their part in an increased effort to remove it. One measure of the amount of aeration done by the lungs is the number of the respirations. For example: if a man breathing a certain number in a minute walks quickly, or exerts himself, and the number is increased, it is fair to suppose that during such time the whole respiratory process has been exalted; and this has been found by actual experiment to be true. The number of respirations, however, in itself is by no means a measure of the amount of the respiratory process. In children and infants, the number is much greater than in adults: also in the same person, from some accidental cause, the number may be augmented, when it is not probable that the function is increased. A pleurodynia, a pain in the abdomen or elsewhere, that is excited by a full inspiration, necessitates a shorter one; and, as a consequence, a larger number is required to make up the deficiency. Thus, two short inspirations may be equivalent to one deep one. In nervous hysterical women, we often see the whole chest not fully